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Updated knowledge of the vine rootstocks

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For some time, the use of rootstocks in viticulture is no longer considered only as a means of agronomic method to avoid the phylloxera damages (*Daktulosphaira vitifoliae*, Fitch, 1856), but as a tool to be able to influence the physiology of the cultivars and to adapt the vine's behavior to the different soil conditions, the climatic characteristics and the cultivation techniques (Ferroni and Scalabrelli, 1995; Intrieri *et al.*, 1999; Di Collalto *et al*., 2001; Scalabrelli *et al.*, 2001). In particular, it is increased the need to use the rootstock as a means to control the physiological processes of the plant, being the root activity closely related to that of the canopy, by exchanging signals and metabolites.

The selection of the vine rootstocks started at the end of 1800, originated the main part of the rootstocks currently used in viticulture, using *V. riparia* and *V. berlandieri*. Subsequently, through the use of other genotypes were obtained new hybrids even more complex. Currently, in Italy there are 39 varieties of vine rootstock recognized on the National Register of Grapevine Varieties (agg. DM 23/03/2012, rev. 24/07/2012, http://catalogoviti.politicheagricole.it/catalogo.php) but are essentially five, those used on large surfaces: Kober 5BB, SO4, 140 Ru, 1103 P, 110 R (Bavaresco, 1998).

In the past, for the diffusion has had an important role the need for nurserymen, who tended to favor rootstocks with excellent performance in propagation. While today there is a greater interest to satisfy the needs of viticulture's techniques also as a consequence of the changed cultivations' conditions. In fact, we need of new rootstocks able to adapt to environmental stresses caused by climate change in progress (mainly droughts and changes in the distribution of rainfall) and/or linked to new growing environments which have restricting factors for the vines. Moreover, the need to obtain specific qualitative characteristics (polyphenols content, grapes' acidity, etc..), suggest to deepen even more the aspects that can influence the wine quality. At the same time, it is necessary to reduce the period of selection (a new rootstock from crossing takes between 20 to 25 years), which through the use of molecular markers could also be reduced by half.

In this paper we provided an overview about the behavior of some rootstocks tested in Tuscany during the last years. In particular, the survey covered the vigor, the productivity, and the characteristics of grapes at maturity, including the phenolic content. The rootstocks considered were: 420A, Kober 5BB, SO4, 161-49, 140 Ru, 1103P, 110R, 779P, 775P, 3309C, 101.14, Fercal, Gravesac and 41B (Scalabrelli *et al.,* 2003).

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